

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
12.11.1997 Bulletin 1997/46

(51) Int. Cl.⁶: **H02J 7/10**, H02J 7/00

(43) Date of publication A2:
27.12.1995 Bulletin 1995/52

(21) Application number: **95112798.4**

(22) Date of filing: **10.12.1990**

(84) Designated Contracting States:
DE FR GB

(30) Priority: 11.12.1989 JP 320838/89
11.12.1989 JP 320839/89
11.12.1989 JP 320840/89
11.12.1989 JP 320841/89

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
90123691.9 / 0 432 690

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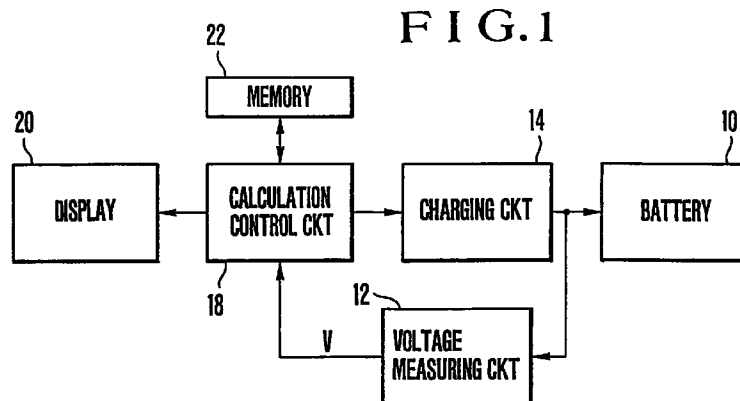
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(54) **Charging apparatus**

(57) A charging apparatus for charging a secondary battery arranged in such a manner that the interterminal voltage of the battery, which is being charged, is measured so that the charging status of the battery is detected in accordance with the measured interterminal voltage of the battery which is being charged and the

charging/discharging characteristics with respect to the interterminal voltage of the battery. As a result, the charging status of the battery can accurately be detected.





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 95 11 2798

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X,P	EP 0 400 849 A (ALEXANDER MFG CO) 5 December 1990 * the whole document * ---	1,2	H02J7/10 H02J7/00
X	EP 0 005 841 A (BLACK & DECKER INC) 12 December 1979 * the whole document * ---	1,2	
X	EP 0 273 577 A (GEN MOTORS CORP) 6 July 1988 * column 1, line 1 - column 2, line 19 * ---	1,2	
X,P	FR 2 645 352 A (MITSUBISHI ELECTRIC CORP) 5 October 1990 * page 1, line 30 - page 2, line 15 * ---	1,2	
X,P	EP 0 368 353 A (SANYO ELECTRIC CO) 16 May 1990 * the whole document * ---	1,2	
X	WO 89 08940 A (WIESSPEINER GERHARD) 21 September 1989 * the whole document * ---	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
X	US 4 678 998 A (MURAMATSU KUNIHIRO) 7 July 1987 * column 1, line 8 - line 53 * -----	1,2	H02J G01R
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 September 1997	Examiner Schobert, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)